

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554**

In the Matter of)	
)	
Promoting Investment in the 3550-3700 MHz)	GN Docket No. 17-258
Band)	
)	
Amendment of the Commission's Rules with)	GN Docket No. 12-354
Regard to Commercial Operations in the)	
3550-3650 Band)	

COMMENTS OF VERIZON

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TABLE OF CONTENTS

I.	INTRODUCTION AND SUMMARY	3
II.	VERIZON SUPPORTS THE COMMISSION’S PROPOSAL TO EXTEND THE PRIORITY ACCESS LICENSE TERM AND PROVIDE AN EXPECTATION OF RENEWAL.....	4
A.	The Commission should not institute license renewal auctions.	5
B.	The Commission should not impose performance requirements on PAL licensees.	6
III.	THE COMMISSION SHOULD INCREASE THE SIZE OF GEOGRAPHIC LICENSE AREAS TO PARTIAL ECONOMIC AREAS.	8
A.	PEAs are a balanced approach to license area sizes and will align PALs with other 5G bands.	8
B.	PEAs better satisfy the objectives of section 309(j) of the Act.	10
C.	Smaller license sizes could create operational challenges and administrative burdens.	12
D.	The Commission should adopt a single license area type for all PALs.....	12
IV.	LIGHT-TOUCH LEASING AND A ROBUST SECONDARY MARKET WILL ENSURE THAT THE 3.5 GHZ BAND IS PUT TO ITS HIGHEST AND BEST USE.	14
A.	The Commission should permit partitioning and disaggregation of PALs.....	14
B.	The Commission should facilitate more flexible light-touch leasing mechanisms.....	15
V.	PUBLIC DISCLOSURE OF SENSITIVE OR PROPRIETARY INFORMATION IN THE CITIZENS BROADBAND SERVICE DEVICE REGISTRY SHOULD NOT BE MANDATED.	16
VI.	REVISION OF THE OUT OF BAND EMISSION LIMITS WILL PROMOTE THE WIDER CHANNEL BANDWIDTHS OF NEXT-GENERATION TECHNOLOGIES.	17
VII.	CONCLUSION.....	19

I. INTRODUCTION AND SUMMARY

Verizon¹ supports the Commission's proposed changes to the rules governing Priority Access Licenses ("PALs") in the 3550-3700 MHz band ("3.5 GHz Band"). The Citizens Broadband Radio Service ("CBRS") established in the 3.5 GHz band has great potential to serve as a key mid-band component of future 5G deployments. As Verizon has previously advised,² if done quickly, the targeted changes to the PAL rules proposed by the Commission could greatly enhance the utility of the 3.5 GHz band and stimulate greater investment and innovation.

In particular, Verizon encourages the Commission to:

- Extend the PAL term from its current length of three years to the industry standard, ten-year term;
- Provide an expectation of renewal for PALs, in keeping with Commission precedent;
- Expand PAL size to Partial Economic Areas ("PEAs");
- Allow the partitioning and disaggregation of PALs in order to promote and facilitate secondary market transactions for PALs;
- Enable more flexible "light-touch" leasing of PALs and encourage efficient processes for spectrum access;
- Prohibit the public disclosure of CBRS device registration information; and
- Revise out of band emission limits to allow for wide channel bandwidths.

¹ The Verizon companies participating in this filing are the regulated, wholly owned subsidiaries of Verizon Communications Inc.

² See Comments of Verizon to CTIA Petition for Rulemaking, GN Docket No. 12-354, at 1 (filed Jul. 24, 2017) ("Verizon Comments").

II. VERIZON SUPPORTS THE COMMISSION’S PROPOSAL TO EXTEND THE PRIORITY ACCESS LICENSE TERM AND PROVIDE AN EXPECTATION OF RENEWAL.

Verizon joins numerous parties from across the wireless industry³ that support the Commission’s proposal to extend the PAL terms from three years to ten years and to eliminate the requirement that PALs automatically terminate at the end of the license term.⁴ As the Commission notes,⁵ and as Verizon has previously discussed,⁶ a ten-year license term is consistent with the license terms adopted for most other licensed mobile bands and has proven to be a successful model throughout the entire history of the mobile industry. More recently, in its *Spectrum Frontiers* proceeding, the Commission once again adopted a ten-year term for all Upper Microwave Flexible Use Service licenses.⁷ With ten-year or longer license terms as the norm in bands ranging from the 600 MHz band through the 40 GHz band, a ten-year term is also the appropriate choice for the 3.5 GHz band.

³ CTIA Petition for Rulemaking, GN Docket No. 12-354, at 6 (Jun. 16, 2017) (“CTIA Petition”); Reply Comments of T-Mobile USA, Inc. to CTIA Petition for Rulemaking, GN Docket No. 12-354, at 8-9 (Aug. 8, 2017) (“T-Mobile Reply Comments”); Reply Comments of AT&T Services Inc. to CTIA Petition for Rulemaking, GN Docket No. 12-354, at 3-4 (Aug. 8, 2017) (“AT&T Reply Comments”).

⁴ *Promoting Investment in the 3550-3700 MHz Band*, Notice of Proposed Rulemaking and Order Terminating Petitions, GN Docket No. 17-258, ¶13 (2017) (“Notice”)

⁵ *Id.* at ¶13.

⁶ See Verizon Comments at 4-6 (noting that ten year license terms are the standard for licensees in 2305-2320 MHz and 2345-2360 MHz bands; 698-758 MHz and 776-788 MHz bands; 1390-1392 MHz band; 1392- 1395 MHz and 1432-1435 MHz bands; and 1670-1675 MHz band and that longer than ten year license terms are the standard for licensees in the AWS-1, AWS-3, and 600 MHz bands).

⁷ *Use of Spectrum Bands Above 24 GHz For Mobile Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 31 FCC Rcd 8014, ¶ 176 (2016) (“Spectrum Frontiers R&O and FNPRM”).

Longer license terms, along with a renewal expectancy, will increase incentives for future investment by creating greater operational stability for licensees. Presented with the opportunity to generate returns on network investments for ten years and beyond, licensees would be more likely to dedicate the substantial resources needed to design, develop, and deploy 3.5 GHz technologies. As we have noted in the record, Verizon has conducted extensive infrastructure and equipment testing with multiple vendor partners in both the lab and the field.⁸ Verizon has also worked with a range of stakeholders through the CBRS Alliance, WinnForum and other industry efforts to develop the standards, rules, and coexistence mechanisms necessary to enable efficient shared use of the 3.5 GHz band.⁹ It has long been our intention to integrate the 3.5 GHz band into Verizon's network to provide faster and more reliable broadband service nationwide. Longer license terms could facilitate Verizon's investments in more innovative 3.5 GHz technologies that require greater commitments of time, capital and other resources.

A. The Commission should not institute license renewal auctions.

Some commenters have advocated requiring PAL licensees to bid for renewal at the end of a license term, as proposed by economist Paul Milgrom.¹⁰ Milgrom argues that this approach would “encourage license turnover when valuable new uses emerge,”

⁸ See Verizon Comments at 2 (discussing Verizon's infrastructure and equipment testing and engagement with the CBRS Alliance and Winn Forum).

⁹ *Id.*

¹⁰ See Comments of Paul Milgrom (Auctionomics), GN Docket No. 12-354, ¶¶ 21-25 (filed Aug. 7, 2017) (“Milgrom Comments”).

by forcing incumbent licensees to bid to keep their licenses, while also protecting the investments of incumbent licensees by giving them the advantage of bidding credits.¹¹

But renewal auctions negate the advantages of longer license terms. Extending the license term provides time for licensees to invest, build, and begin to recoup their investments. Some of these investments will take a significant portion of the license term to complete. Without some renewal expectancy, licensees must endure a high risk of stranded investments.

As Milgrom notes, “by design, the economic effect of this auction is to create something resembling an active secondary market for licenses, which integrates well with the proposed simple auction design.”¹² As discussed below, Verizon supports alternative changes to the PAL rules to facilitate an active secondary market and enable new entrant access (e.g., partitioning and disaggregation of license areas and “light-touch” leasing). Rather than attempt to *simulate* the effects of a well-functioning secondary market with a new and untried economic instrument, Verizon encourages the Commission to use more established mechanisms that can take advantage of the opportunities offered by the secondary market itself.

B. The Commission should not impose performance requirements on PAL licensees.

In the *First Report and Order*, the Commission declined to impose performance requirements on PAL licensees, finding that the PAL rules create adequate economic

¹¹ *Id.* at 22 (Under the Milgrom proposal, incumbent licensees would be required to bid to renew their license at the end of the license terms. Each incumbent would be given a bidding credit to reimburse it for some percentage of the auction price for the license if it won its renewal auction. If the incumbent loses the auction, it would receive a bidding credit to apply to the purchase of other licenses).

¹² *Id.*

incentives to ensure efficient use of the band and to discourage spectrum warehousing.¹³

While a longer license term and an expectation of renewal would more closely align 3.5 GHz licenses with licenses in other bands, those changes do not warrant the imposition of performance requirements on PAL licensees.

The Commission itself has cited other structural incentives that help ensure efficient use of the band, including “rules permitting opportunistic GAA use and the relatively inexpensive deployment costs in this band.”¹⁴ The opportunistic GAA, “use it or share it” framework, prevents warehousing without the need for performance requirements, helping drive efficient use of the band and rapid deployment.

The Commission has touted the 3.5 GHz band as an “innovation band,”¹⁵ and industry has taken up its challenge to think creatively about how the band can facilitate new technologies, spectrum uses, and types of deployment. This flexibility is, in part, what makes the 3.5 GHz band so attractive for prospective 5G applications, which will involve technologies, network designs, and deployment scenarios beyond our current expectations and experiences. The imposition of performance requirements would likely chill incentives to innovate and instead result in more orthodox deployments that could delay the next generation of wireless technologies.

Verizon has already expended a substantial amount of capital in its efforts to accelerate the availability of the 3.5 GHz band and to prepare for a rapid deployment of

¹³ See *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 Band*, Report and Order and Second Further Notice of Proposed Rulemaking, GN Docket No. 12-354, ¶¶ 102, 113, and ¶138 (2015) (“First R&O and Second FNPRM”).

¹⁴ First R&O and Second FNPRM at ¶113.

¹⁵ See *Amendment of the Commission’s Rules with Regard to Commercial Operations in the 3550-3650 Band*, Further Notice of Proposed Rulemaking, GN Docket No. 12-354, ¶ 2 (2014).

new 3.5 GHz technologies. We are eager to deploy in markets across the United States. Imposing a performance requirement at this stage and in this context could, paradoxically, have the effect of impeding – rather than advancing – the rapid deployment of innovative technologies in the band.

III. THE COMMISSION SHOULD INCREASE THE SIZE OF GEOGRAPHIC LICENSE AREAS TO PARTIAL ECONOMIC AREAS.

Verizon supports the Commission’s proposal to increase the geographic licensing area of PALs.¹⁶ We agree that larger licenses would stimulate investment, promote innovation, and encourage efficient use of spectrum resources.¹⁷

A. PEAs are a balanced approach to license area sizes and will align PALs with other 5G bands.

When the Commission first adopted PEAs in 2014, it concluded that PEAs strike a careful balance between large and small geographic license area sizes and would meet the needs of smaller, rural operators seeking access to spectrum resources.¹⁸ The Commission determined that PEAs are small enough to permit entry by providers that wish to offer localized wireless broadband service and large and scalable enough to suit providers intending to serve on a larger geographic scale.¹⁹

Two years later, the Commission again endorsed PEAs when adopting them for the 37 GHz and 39 GHz bands:

[L]icensing the 39 GHz band on a PEA basis strikes the appropriate balance between facilitating access to spectrum by both large and small providers and

¹⁶ Notice at ¶ 23.

¹⁷ *Id.*

¹⁸ See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, GN Docket No. 12-268, Report and Order, 29 FCC Rcd 6567, ¶ 18 (2014) (“Incentive Auction R&O”).

¹⁹ *Id.*

simplifying frequency coordination while incentivizing investment in, and rapid deployment of, new technologies.²⁰

And the Commission recently licensed additional millimeter wave spectrum in the 24 GHz and 48 GHz bands using the PEA licensing structure.²¹ PEAs in the 3.5 GHz band would similarly enable access by both large and small providers and incent larger providers to invest in the band, innovate with new 3.5 GHz technologies, and deploy 3.5 GHz networks more rapidly and to more areas, including rural areas.

Also, as Verizon has previously noted, the Commission and the industry have integrated the 3.5 GHz band into plans for larger, multi-band, 5G deployments.²² Most of the major bands that will comprise the 5G ecosystem are already licensed by PEA – the 600 MHz,²³ 24 GHz, 37 GHz,²⁴ 39 GHz, and 48 GHz bands²⁵ – and adopting PEA license areas for the 3.5 GHz band would provide a more consistent and rationalized license structure across all potential 5G bands.

A broad group of stakeholders across numerous segments of the wireless industry support larger license areas in the 3.5 GHz band on the basis that larger licenses would promote greater investment in the band, ease and simplify network deployment and operation, and create significant efficiencies in the band.²⁶ Verizon agrees and encourages the Commission to adopt larger license areas for PALs.

²⁰ *Id.*

²¹ Spectrum Frontiers R&O and FNPRM at ¶ 176.

²² Verizon Comments at 8.

²³ Incentive Auction R&O at ¶ 18.

²⁴ Spectrum Frontiers R&O and FNPRM at ¶ 121.

²⁵ *Id.* at ¶ 82.

²⁶ See Reply Comments of CTIA, GN Docket No. 12-354, at 3-4 (Aug. 8, 2017) (“CTIA Reply Comments”); T-Mobile Reply Comments at 10-12; AT&T Reply Comments at 4-7; Comments of Ericsson, GN Docket No. 12-354, at 6-7 (Jul. 24, 2017); Reply Comments of

B. PEAs better satisfy the objectives of section 309(j) of the Act.

In the Notice, the Commission seeks comment on whether PEAs would “effectively balance the objectives set forth in section 309(j) of the Act.”²⁷ PEA license areas satisfy the objectives of section 309(j) better than census tracts.²⁸ Section 309(j) directs the Commission to promote, among other things, an “efficient and intensive” use of the band, “investment in and rapid deployment of new technologies and services,” and “economic opportunity for a wide variety of applications.”²⁹ In adopting PEA license areas, the Commission will best promote these statutory objectives.

Efficient and intensive use. Census tract licensing would discourage efficient and intensive use of the 3.5 GHz band by greatly increasing the probability of harmful interference around the tract boundaries. At the census tract level, the 3.5 GHz band would contain over 74,000 license areas that, within themselves, contain more than 518,000 PALs.³⁰ This cluttered and chaotic environment could create substantial interference risks and thus necessitate operational adjustments or “buffering zones” that would significantly limit the utility of the band and result in less efficient and intensive use.³¹ PEA licensing, comprising only 416 PEAs and therefore 2,912 PALs, mitigates this interference concern and enables far more efficient and intensive use of the band.

United States Cellular Corporation, GN Docket No. 12-354, at 3-6 (Jul. 24, 2017) (U.S. Cellular Comments”).

²⁷ Notice at ¶ 24.

²⁸ 47 U.S.C. § 309 (j).

²⁹ *Id.*

³⁰ See Comments of Ericsson, GN Docket No. 12-354, at 6 (Jul. 24, 2017); Comments of Qualcomm Inc., GN Docket No. 12-354, at 5 (Jul. 24, 2017) (“Qualcomm Comments”); U.S. Cellular Comments at 3.

³¹ See, e.g., Comments of AT&T Services, Inc., GN Docket No. 12-354, at 8-9 (Jul. 24, 2017).

Investment in technology. Under the right regulatory structure, large carriers are likely to invest in the rapid deployment of new technologies and services in the 3.5 GHz band. Investments by Verizon and its competitors are responsible for this country's global leadership in mobile broadband through the 4G era and will also ensure U.S. victory in the race to 5G. However, the prospect of a cluttered, interference-laden 3.5 GHz band will deflate service provider interest in the band and reduce investment in technology. As noted above, Verizon encourages the Commission to license PALs by PEAs, the license area that the Commission has already concluded is the right size to support innovation in other bands.

Economic opportunity. Finally, for the 3.5 GHz band to meet its full potential, it needs the efficiencies of scale and guarantees of equipment volume that large carriers provide to enable equipment vendors to make the substantial investments in research, development, and manufacturing that they require to create a robust equipment ecosystem in a newly available band. By decreasing the incentives for wireless carrier investment in the technological development of the band, census tract licensing could also decrease the size and diversity of the band's equipment ecosystem and, in so doing, diminish the opportunity for a wide variety of applications to emerge in the 3.5 GHz band. PEAs would instead bolster incentives for the large carriers and their equipment vendors to invest further in next generation networks and services in the band.

C. Smaller license sizes could create operational challenges and administrative burdens.

Many parties note the challenges associated with auctioning a large number of license under the current rules.³² But, even if those challenges can be overcome through auction design, the operational difficulties of managing the previously discussed interference problems and the administrative burden of managing a large number of small license areas would remain a challenge. The Commission's licensing databases are far less robust than its auction systems, and managing such a large number of census tract licenses will be exceedingly difficult for both licensees and the Commission. For example, under the Commission's current rules and the current design of its Universal Licensing System and other licensing databases, even relatively simple transactions that affect license ownership can involve analyses, filings, and notices that require hundreds of person hours and hundreds of thousands, even millions, of dollars. In the context of hundreds of thousands of PALs, these numbers could increase exponentially and create an unmanageable administrative burden. Notwithstanding the ability of the Spectrum Access Systems (SASs) to manage and coordinate spectrum use within the 3.5 GHz band, the Commission and licensees themselves will likely have difficulty effectively administering hundreds of thousands of PALs.³³

D. The Commission should adopt a single license area type for all PALs.

The Commission should reject calls for different license areas within a PALs auction. In the *Notice*, the Commission asked whether it should adopt a hybrid

³² AT&T Reply Comments at 5; CTIA Reply Comments at 3; Ericsson Comments at 6; U.S. Cellular Comments at 3-5.

³³ See, e.g., CTIA Reply Comments at 5; T-Mobile Reply Comments at 10-12; US Cellular Reply Comments at 3-6.

combination of license areas.³⁴ In particular, it states that “[s]ince we are offering seven PALs, commenters in favor of offering different license sizes in rural and urban areas should discuss what would be the appropriate balance between larger geographic areas and census tracts.”³⁵ This statement about different geographic areas among the seven PALs seems to suggest the possibility of geographically homogenous overlapping PALs.

Whichever license area the Commission adopts for the 3.5 GHz band, however, Verizon strongly encourages it to choose a single license area type for all PALs. Attempting to license a mix of area types within the 3.5 GHz band could result in a chaotic hodgepodge of licenses and would further complicate the auction process, make effective price discovery substantially more difficult, and potentially reduce auction participation and revenues.

Milgrom notes that the simplest design for a PAL auction would be a simultaneous, multiple round clock auction without switching.³⁶ A switching rule is less relevant if all PALs within a geographic area are treated as fungible, thus eliminating the need to switch between substitutes when bidding. But a hybrid combination of overlapping geographical license areas could complicate bidding strategies and determinations of substitutability because of geographical differentiation between overlapping PALs.

Employing multiple license sizes increases the complexity of the auction exponentially, though this complexity might be slightly improved by the use of package

³⁴ Notice at ¶ 25.

³⁵ *Id.*

³⁶ Milgrom Comments at ¶ 27 (In a multi-round auction, a switching rule allows bidders to switch from one substitute product (in this case, a PAL license) to another across rounds in the auction. Such switching allows bidding to arbitrage price differentials between licenses.).

or combinatorial bidding. In an auction with fewer potential licenses, such as the AWS-3 and 700 MHz auctions, a more complicated approach with different license area sizes might be manageable. However, with 518,000 potential PALs, multiple overlapping license sizes could prove untenable.

IV. LIGHT-TOUCH LEASING AND A ROBUST SECONDARY MARKET WILL ENSURE THAT THE 3.5 GHZ BAND IS PUT TO ITS HIGHEST AND BEST USE.

A. The Commission should permit partitioning and disaggregation of PALs.

Should the Commission adopt its proposal to enlarge PAL areas to PEAs, it should also allow the partitioning and disaggregation of PALs to promote a robust secondary market in the 3.5 GHz band. As we and numerous other commenters have noted, partitioning and disaggregation will enable targeted deployments without imposing the additional burden of administering 518,000 licenses.³⁷

Verizon strongly disagrees with those commenters that claim that secondary market transaction costs are a barrier to entry and that PAL licensees lack incentives to partition and disaggregate their licenses.³⁸ Verizon engages in dozens of spectrum transactions every year, often with small and rural entities.

WISPA claims that “[s]pectrum disaggregation and geographic partitioning are not adequate substitutes given that PAL holders are not compelled to enter into secondary market transactions.”³⁹ “Compelling” licensees to enter into private, commercial transactions has never been the Commission’s preferred regulatory practice. Rather, the

³⁷ CTIA Petition at 10-11; AT&T Reply Comments at 6; T-Mobile Reply Comments at 11-12; Verizon Comments at 9.

³⁸ See, e.g., Comments of the Wireless Internet Service Providers Association, GN Docket No. 12-354, at 18 (Jul. 24, 2017) (“WISPA Comments”).

³⁹ WISPA Comments at v.

Commission relies upon market forces and economic incentives to drive spectrum to its most beneficial public use. If licensees are permitted to partition and disaggregate their PALs, there is no evidence in the record to suggest that they will not do so, as they have done in other bands.

B. The Commission should facilitate more flexible light-touch leasing mechanisms.

Given the Commission's proposed changes to the PAL rules, an even more flexible "light-touch" leasing approach could help ensure a well-functioning secondary market for PALs. In the Second Report and Order,⁴⁰ the Commission describes a procedure by which it could first formally certify lessees to use PAL spectrum and then, should a lessee wish to enter into a leasing arrangement for a PAL, the licensee would simply notify the SAS, rather than having to seek and obtain prior approval by the Commission for each PAL secondary market transaction.⁴¹ Several commenters have supported this kind of streamlined leasing process,⁴² with some, such as Federated Wireless, describing fast electronic consent and verification processes that could greatly simplify lessee access to spectrum.⁴³ Verizon supports this precertification approach. Under such a system, individual lease transactions in the secondary market would not require Commission approval, thereby allowing more efficient and faster lease

⁴⁰ See *Amendment of the Commission's Rules with Regard to Commercial Operations in the 3550-3650 Band*, Order on Reconsideration and Second Report and Order, GN Docket No. 12-354, at ¶ 205 ("Second Report and Order").

⁴¹ *Id.* at ¶ 209-220.

⁴² See Comments of Cantor Telecom to the First R&O and Second FNPRM, GN Docket No. 12-354, at 12 (Aug. 17, 2015); Comments of Federated Wireless to the First R&O and Second FNPRM, GN Docket No. 12-354, at 16-17 (Aug. 14, 2015) ("Federated Second FNPRM Comments"); Comments of the Information Technology Industry Council to the First R&O and Second FNPRM, GN Docket No. 12-354, at 3 (Jul. 16, 2015); and Comments of Key Bridge to the First R&O and Second FNPRM, GN Docket No. 12-354, at 7-8 (Jul. 15, 2015).

⁴³ See Federated Second FNPRM Comments at 16-17.

transactions and greatly reducing the administrative burdens on licensees, lessees and the Commission.

Finally, in its comments, Nokia describes an even less formal process by which lessees could access spectrum.⁴⁴ Nokia notes that PAL licensees could take advantage of the flexible CBRS rules and WinnForum technical specifications to register specific PAL Protection Areas (“PPAs”) within a PAL.⁴⁵ This would allow a PAL licensee to divide its service area within one PAL, or contiguous PALs, into smaller, “used” portions.⁴⁶ Nokia explains that the PAL licensee could then allow lessees to coordinate and use other unused areas within the PAL(s) by claiming new PPAs for their own use.⁴⁷

Verizon encourages the Commission to consider these and other processes that might better enable a fast and efficient process for spectrum access.

V. PUBLIC DISCLOSURE OF SENSITIVE OR PROPRIETARY INFORMATION IN THE CITIZENS BROADBAND SERVICE DEVICE REGISTRY SHOULD NOT BE MANDATED.

Verizon supports the Commission’s proposal to amend the current rules to prohibit SASs from publicly disclosing Citizens Broadband Service Device (CBSD) registration information.⁴⁸ The existing rules fail to adequately ensure the privacy of competitively sensitive and security-related network information. Verizon has worked closely with other providers, potential SAS and ESC administrators, and equipment manufacturers through the CBRS Coalition and WinnForum in the development of the CBRS SAS framework. Contrary to the claims of certain commenters, Verizon sees no

⁴⁴ See Comments of Nokia, GN Docket No. 12-354, at 6-8 (Jul. 24, 2017).

⁴⁵ *Id.*

⁴⁶ *Id.*

⁴⁷ *Id.*

⁴⁸ Notice at ¶ 37.

compelling evidence that either the CBRS sharing framework or GAA and PAL deployment plans would require the public disclosure of CBSD registration information. Disclosure of private information in exchange for spectrum access should not be mandatory.

Furthermore, Google erroneously claims that anonymized public registration data do not present competitive or security concerns because wireless carriers' transceiver locations are visible to a passerby, logged by crowd-sourced applications, and publicly documented.⁴⁹ If such data is, in fact, so easily ascertainable, then Google should be capable of compiling it itself, rather than disclosing data it receives from providers.

VI. REVISION OF THE OUT OF BAND EMISSION LIMITS WILL PROMOTE THE WIDER CHANNEL BANDWIDTHS OF NEXT-GENERATION TECHNOLOGIES.

LTE supports individual channel bandwidths up to 20 megahertz and carrier aggregation techniques can support even larger bandwidths. However, the current out of band emission ("OOBE") limits in the 3.5 GHz band would require mobile devices to significantly reduce their transmit powers at the expense of signal coverage, quality of service, and general utility of the band when using anything more than 10 megahertz.⁵⁰ Because the 3.5 GHz band rules allow PALs to aggregate up to 40 megahertz and GAA to use even more spectrum if available, these OOBE limits are unduly restrictive and will impair both PAL and GAA operations in the band.

⁴⁹ Comments of Google and Alphabet Access, GN Docket No. 12-354 (Jul. 24, 2017) at 28-29.

⁵⁰ See e.g., Qualcomm Comments at 3-4; Petition for Reconsideration of CTIA, GN Docket 12-354, at 4 (Jul. 23, 2015).

Therefore, Verizon supports Qualcomm's proposal to revise the 3.5 GHz band emissions limits to enable use of 20 megahertz and 40 megahertz-wide channels in the band at the same transmit power levels at which 10 megahertz LTE operations are currently permitted.⁵¹ We further support Qualcomm's proposal to leave the current adjacent band protection limit below 3550 MHz and above 3700 MHz in place so that the requested revision would enable wider bandwidth operations without creating additional harmful interference for adjacent band users.⁵² In particular, we support revising the Commission's rules to provide:

1. 20 megahertz operations with an additional 10 megahertz on both sides of the operating channel edge (for a total of 20 megahertz) to achieve the -25 dBm/MHz limit (i.e., 10 megahertz to 20 megahertz outside the channel edge);
2. 40 megahertz operations with an additional 30 megahertz on both sides of the operating channel edge (for a total of 40 megahertz) to achieve the -25 dBm/MHz limit (i.e., 10 megahertz to 40 megahertz outside the channel edge) ; and
3. A -13 dBm limit from the channel edge until the beginning of the -25 dBm/MHz limit (i.e., channel edge to 10 megahertz outside the channel edge).

Finally, as described by Qualcomm, these changes will not adversely impact adjacent band users because operations near the band edge would continue to be constrained by the -40 dBm/MHz additional protection requirement for adjacent bands.⁵³ Verizon believes that these adjustments will greatly improve the utility of the band for both PAL and GAA users alike by removing an unnecessary constraint to in band operations by allowing operators to take full advantage of wider channels.

⁵¹ Qualcomm Comments at 3-4 (Jul. 24, 2017)

⁵² *Id.*

⁵³ *Id.* at 4.

VII. CONCLUSION

Verizon continues to support the Commission's efforts in the 3.5 GHz band and remains committed to the development of the band. The recommendations outlined above will further strengthen the band and increase its commercial value and utility. Verizon urges the Commission to act quickly in making the proposed changes so that any necessary adjustments to the SASs can be made as they are still being developed. Finally, we encourage the Commission to make the band available for GAA use as quickly as practicable and to move expeditiously to auction PALs.

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